

mercial prosperity, which, we trust, this city is destined to run. By establishing a permanent tide observatory, with a provision for the regular reduction of the observations, and the consequent constant improvement of tide tables, Bristol would render a greater service to science than any city has ever yet rendered.

Naut. Mag.

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*Of Chemical Combinations, produced in virtue of the presence of Bodies which remain to continue the process.* By MR. EXLEY.

It has been observed, said Mr. Exley, that in many instances, powerful chemical affinities have been brought into activity by the presence of certain bodies which remain insulated. This Berzelius attributes to a peculiar force, which he calls catalytic force. Several reasons are adduced to show that this catalytic force is but one species of the general effects which occur usually in chemical actions, all of which are modifications of universal gravity arising from circumstances. The actions of this force were illustrated in four instances:—First, said Mr. Exley, a piece of spongy platina, about the size of a pea, is placed before a fine jet of hydrogen: this produces the combination of oxygen and hydrogen, raising the temperature till ignition occurs. To explain this by my general principles, it must be observed that, as in all metals, so especially in platina, because of its great density and atomic weight, the sphere of repulsion is very small. Hence, the ethereal atmospheres of its atoms are very dense, on which account the atoms of other bodies are drawn very nearly into combination, and thus, by its influence, the atoms of oxygen and hydrogen are brought so near together as to effect their union; caloric is given out; this favours the like union of other atoms, till ignition is produced. The effect of a clear surface of platina in causing the combination of a due mixture of oxygen and hydrogen, depends on the same conditions. 2nd, Another example given, was the conversion of starch into sugar, by means of dilute sulphuric acid. 3rd, The conversion of sugar into alcohol. 4th, The conversion of the alcohol into ether, by means by sulphuric acid.

Athenæum.

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*Researches on the Chemical Equivalents of certain Bodies.* By RICHARD PHILLIPS, Esq., F. R. S.

The author examines, by a new series of experiments, the truth of the theory of Dr. Prout and Dr. Thompson, namely, "that all atomic weights are simple multiples of that of hydrogen"—a theory which the late Dr. Turner had maintained is at variance with the most exact analytic researches, and, consequently, untenable. Although the experiments of Dr. Turner, and the inferences which he drew from them, agree very nearly with those of Berzelius, it still appeared to the author desirable to investigate this subject; and it occurred to him, that the inquiry could be conducted in a mode not liable to some of the objections which might be urged against the processes usually employed. Dr. Turner, having adopted a whole number, namely, 108, as the equivalent of silver, this substance was selected by the author as the basis of his inquiry into the equivalent numbers of chlorine, and some other elementary gases. It appeared to him, that the chance of error arising from the fusing of the chloride of silver might be entirely removed, and other advantages gained, by experimenting on silver on a large